Abstract

Electromagnetic waves in wide frequency ranges up to photonics have been used for applications to time-domain imaging (TDI). Realistic time domain imaging requires a rapid optical delay line on the order of 100 ps with sampling rate at least 100 Hz. Present available optical time delay systems suffer either from low sampling rate or low time delay length, deviating from ideal requirements. The purpose of this invention is to introduce a miniature and rapid scanning optical delay line based on micro-opto-electro-mechanical systems (MOEMS) technology to improve the data acquisition in time domain imaging, capable of sampling rate beyond 100 Hz and time delays beyond the 100 ps.